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Title : Social structure in breeding grey seals: detecting interannual associations.

Category : Behavior

Student : Not Applicable

Preferred Format : Either Oral or Poster Presentation

Abstract : Non-random associations may occur amongst breeding female grey seals because of their high degree of pupping site fidelity, high annual return rates and low variability in individual parturition dates between years.

However, to be relevant to the individual seal, associations must occur within a range where mothers regularly come into contact with one another. Furthermore, associations may be passive (occurring solely due to site fidelity) or active (mothers exercising some form of choice). Here, daily movement patterns of mothers on North Rona, Scotland were quantified in order to define the spatial scale at which individuals are likely to come into contact with one another on the breeding colony. Hourly maps of mothers' locations revealed that the maximum daily displacement from a mother's starting location was 10m or less for 88% of mothers in 1999 and 97% of mothers in 2000.

Therefore mothers are unlikely to come into contact with one another if they are separated by a distance of >20m. Using the 20m threshold to establish the definition for association, 226 pairs of mothers (from a total of 67 individuals) were defined as being spatially and temporally associated within a single breeding season on North Rona, with 45 of these pairs being associated in two years. A simple model was used to calculate the likelihood of female association in two years as a result of site fidelity. The results showed that passive association could account for interannual association between mothers that returned close to their previous pupping site (<30m). However, the observed proportion of females that showed inter-annual association after a displacement of >70m from their previous pupping site was over 30 times greater than that expected from a model based on site fidelity alone. This suggests that active association occurs between some adult females on North Rona.